DOCUMENT RESUME

ED 372 925 SE 054 199

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TITLE An Examination of How Elementary Administrators Help Teachers Change Their Beliefs about Teaching Mathematics and Guide the Process of Reform.
PUB DATE 2 Oct 93
NOTE 21p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Administrator Role; *Attitude Change; Beliefs; Case Studies; Cooperative Planning; *Educational Change; Elementary Education; Interviews; *Mathematics Instruction; *Mathematics Teachers; Models; *Principals; Questionnaires; *Teacher Administrator Relationship; Teacher Role
IDENTIFIERS *Reform Efforts

ABSTRACT

Previous studies have examined the day-to-day behavior of principals in an attempt to identify specific, concrete behaviors that help teachers in their efforts toward improvement. But, there is still a gap in knowledge about principal interventions during the period in which decisions are made about prospective changes and reform, and plans for change are discussed, designed, and developed. To investigate this question, a study was conducted in select elementary schools that were identified as sites where teachers and principals had collaborated to accomplish improvements in their mathematics programs. At each elementary school, questionnaires were completed by the principal and one teacher who was actively involved in the change process, and two of the schools were chosen for on-site visits. The items on the questionnaire and in the on-site interviews focused on four domains: (1) principals' roles and actions, (2) the events of the change process, (3) teachers' roles in the change process, and (4) contextual factors contributing to change. The Model for Successful Change, a conceptual framework consisting of the four domains, was developed. Three major implications emerged from the study: (1) The role of the principal in the change process is crucial; (2) Even traditional teachers are willing to change their teaching methods and beliefs when empowered to make the decisions that impact their classrooms; and (3) A collaborative planning structure is successful. Contains 14 references. (MKR)

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An Examination of How Elementary Administrators Help Teachers Change Their Beliefs About Teaching Mathematics and Guide the Process of Reform

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October 2, 1993

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An Examination of How Elementary Administrators Help Teachers Change Their Beliefs About Teaching Mathematics and Guide the Process of Reform

Educational change and school improvement have been major topics in educational literature for many years. The rhetoric of change is appealing, and in a climate of accountability state mandates for educational improvement have proliferated. There is a legitimate question, however, as to the extent that real change is occurring. When educational mandates enforce the typical top-down approach to educational improvement, educators may well engage in the ceremony of changing without actually relinquishing anything substantial. Deal (1984) characterized this approach to reform as "dancing." He suggested that schools have been staging a pretense of reform (dancing) for the last three decades. Observers enjoy the dance--much energy is expended, and there is apparent movement--but the essence of schools and classrooms appears to remain largely the same.

There is, of course, support in the literature for the position that change can occur, that teachers and administrators do utilize research and collaborate to improve instruction, and educational institutions do have shining examples of educational progress and growth (Clark & McCarthy, 1983; Cobb, Wood, Yackel, Nicholls, Wheatley, Tigatti, & Perlwitz, 1991; Driscoll, 1987; McCormack-Larkin & Kritek, 1982).

Even though much research focuses on schools already thought to be doing a good job, Lieberman and Miller (1986) noted that prevailing research

has not provided educators with practical information about the process of attaining excellence. Fullan (1985) has remarked a need for research to go beyond definitions of change and address how change occurs. He called for research that answers questions about where to start, how to sequence events, and what approaches have proven successful. Studies conducted by Hord and Goldstein (1982), Hord and Hall (1987), and Hord and Huling-Austin (1986) examined day-to-day behaviors of principals in an attempt to identify specific concrete behaviors that helped teachers in their improvement efforts. These studies delineated principal interventions in the implementation of new curricula. However, there is still a gap in knowledge about principal interventions during the period where decisions are made about prospective changes and plans for change are discussed, designed, and developed.

This study was conducted in select Indiana elementary schools which had been identified as sites where teachers and principals had collaborated to accomplish improvements in their mathematics programs. The study utilized a questionnaire and site visits to identify specific principal behaviors which influenced teachers to examine their teaching beliefs, and to delineate conditions which administrators can provide to help teachers improve their classroom teaching.

Methodology

The schools that were chosen for this study were identified by either an

Educational Consultant from the Indiana Department of Education or a Mathematics Professor at Purdue University as schools in which had recently been conducted collaborative and systematic examinations of and changes in their mathematics programs. Through telephone contacts, principals and teachers of forty elementary schools agreed to participate in the questionnaire portion of the study. The schools incorporated a wide assortment of geographical settings, enrollment sizes, and minority representation and thus served to provide a diverse cross section of elementary schools.

The principal of each elementary school and one teacher who was actively involved in the change process were asked to complete a questionnaire including both closed (Likert-type) and open-ended items. Both sets of items focused on four domains of the educational change process which had been developed from the literature. These domains were Principals' Roles and Actions which had a positive effect on the process of change, The Events of the Change Process, Teachers' Roles in the Change Process, and Contextual Factors Contributing to Change. Validation of the instrument utilized a pilot study and critiques of items by administrators, educational administration graduate students, professors, and state department of education staff. The return rate for the questionnaire was 90%.

Responses to the open-ended items were aggregated to develop descriptive information for each of the four change domains. The assignment of the material in the open-ended responses to the four change domains was

validated by four independent reviewers (Miles & Huberman, 1984). The closed items were utilized to identify schools for a site visit. The determining factor for choosing the case study sites was a mean of 4 or higher on the closed items for both the principal and the teacher of a given school, and high agreement between the principal and the teacher as measured by the corresponding correlation coefficient. The principal's responses, teacher's responses, overall school means, and correlations for each school were ranked. The schools that fell in the upper 20% for correlation and mean of principal and teacher were identified as the case study sites. After two case study sites were chosen and both sites agreed to participate, a date for a one day on-site visit was scheduled. Each principal arranged interviews with representatives of the staff who had participated in the change efforts. Data for the case studies were collected primarily through one-on-one and group interviews. The four change domains were the focus of every interview. The interview subjects for both sites totaled eighteen teachers and two principals.

Findings

The responses to the open-ended items in the questionnaire were reviewed and categorized within the four change domains into broad strategies and key factors in the process of change. The comments of the principals and teachers essentially provide operational definitions of the strategies and key factors.

Principals' Roles and Actions

Educators described eight roles and actions of principals as having a positive effect on the process of change.

(1) **Support** - Support from the principal was evident when the principal motivated and encouraged teachers, offered positive verbal and non-verbal feedback, and created an atmosphere where taking risks and experimenting with new ideas and techniques was accepted and sanctioned. In the open items and interviews, teachers cited situations where principals: wrote notes to teachers praising them for trying innovative ideas; demonstrated a positive attitude; developed an environment that supported change and accepted challenges; encouraged teachers to try new things but made participation voluntary on the teacher's terms; gave teachers time to adjust to new ideas; and displayed enthusiasm for classroom activities.

(2) **Planning** and Participating in the Process - These behaviors included situations where principals wrote curricula and grants, discussed and encouraged change, participated in planning and classroom instruction, offered teaching suggestions, and observed teachers.

(3) Providing for **Training** - Principals not only provided time for planning, but also encouraged teachers to attend workshops, presentations, and in-services and made arrangements for teachers to participate in those staff development opportunities.

(4) Providing **Resources** - Teaching materials and resources were purchased

to implement programs.

(5) Providing **Information** - Research and information, journal articles, research on student achievement scores, and material on new teaching approaches were provided by principals.

(6) Communicating with **Parents** and Constituencies - Principals communicated and maintained liaisons with parents and other constituents such as school board, central office administrators, and university personnel.

(7) **Empowerment** of Teachers - These were situations where principals empowered teachers to make important decisions by collaborating with teachers and sharing the decision-making process with them.

(8) **Leading** the Changes - Principals were cited as the leader of the building, and as the individual who was defining the school vision and guiding the process of change.

Certain quotes cited in the questionnaire and during the site visits produced comments illustrative of the role of the principal in the process of change. "The change was fully supported by the principal. It was presented as an option. For any change to occur and be successful, it must be wanted by the teachers and supported by the principal." "Our principal has been the guiding force in encouraging teachers to attend professional meetings. She has provided days for conferences, paid registration fees, and reimbursed teachers for motel expenses. Our principal reads many journals and articles about education. She routes these articles to the appropriate staff members."

"In my case, I found the verbal support was most beneficial. I was told that my new style was accepted and encouraged. I received notes expressing the desire that I continue what I was doing." She visits the classrooms and gives positive feedback." "He scheduled team planning time for us once a week." "He creates a climate where teachers can take ricks." "He talks about change but that isn't enough. He follows that up by giving suggestions. He gives teachers things to read." "He knows what is going on in the classroom. He is in and out of the classroom all the time." "She provides a risk-free environment which nurtures change efforts."

The Events of the Change Process

Responses to the question of the actual events which occurred during the change process clustered into nine categories.

(1) **Planning** - There were a variety of activities wherein principals and teachers examined current programs, developed plans and programs, wrote curricula and grants, selected new programs for use, and discussed and encouraged change.

(2) **Training** - Training included attending workshops, conferences, and in-services. Training and first hand participation in staff development were necessary before changes could be transferred to classroom use.

(3) Purchasing **Resources** - New materials were purchased to facilitate the implementation of new programs.

(4) Gathering **Information** - Teachers and principals gathered information, looked at alternatives, piloted specific programs, and read research about new techniques or programs.

(5) Communicating with **Parents** - There was communication and involvement of parents to explain new programs.

(6) **Sharing** Information - Teachers and principals provided in-service for other staff members, observed other teachers, and learned from each other by sharing knowledge.

(7) **Recognition of Need** for Change - There was recognition of the need for different teaching approaches and realization that students were not achieving satisfactorily with the traditional teaching methods.

(8) **Implementing** New Methods - There was implementation and defense of new techniques, methods, and programs.

(9) **Evaluating** New Programs - New programs and student outcomes were evaluated and programs were revised as necessary.

Concerning the process of change, teachers made several pertinent comments. "Teachers must have a say and choice for any change process to be successful. It can't be mandated." "Teachers need to be in the mainstream of the decision-making and the principal needs to be there for direction and support and to follow through on plans." "We read a lot of research. Teachers wanted to make changes. The administration saw this and refocused and organized the changes. Teachers were asked for their opinions and given

many opportunities to give input."

Teachers' Roles in the Change Process

Eight teachers' roles were derived from the responses.

(1) Participating in **Planning** - These were a variety of activities where teachers developed plans and programs, wrote curricula, and selected new programs and materials for use.

(2) Participating in **Training** - Teachers attended workshops, conferences, and in-services.

(3) Gathering **Information** - Teachers looked at alternatives, and read research and articles.

(4) Communicating with **Parents** - Teachers communicated to parents and involved parents in the instructional program.

(5) **Empowerment** to Make Decisions - Teachers were involved in decision-making and demonstrated motivation and a positive attitude toward change. Teachers who had been empowered to make the decisions that would affect their classrooms stated that they were committing to new programs and assuming accountability for their decisions.

(6) **Leading** the Changes - Some teachers were initiating the changes in the building and were instrumental in leading the changes.

(7) **Sharing** - Teachers provided in-service for other teachers, shared information, and discussed new techniques with colleagues. Principals

provided opportunities for this to occur. Flexible schedules and alternative classroom structures were devised and organized to provide teachers with time during the regular school day not only to observe other teachers teaching lessons but also to discuss new programs and techniques.

(8) **Implementing** - There was implementation of new techniques, methods, and programs and working with students.

The responses also addressed the teachers' roles in the process of change. "The teacher's attitude is vital to change. If a teacher doesn't believe that the change will improve the teaching of children, reform is virtually impossible. Teacher attitude and appropriate materials make reform happen. We found that we could share joys, frustrations, and new ideas on what worked for us as we taught in the real world. Change is scary and uncomfortable. Without administration and peer support, teachers worry about 'trendy' shifts in education. Standardized tests also make innovations less attractive if teachers are worried about how their students will look in comparison to other classes." "Teachers are the most important component in the change process because they will do what they want in their classrooms regardless." "You can't have change without changing the mind set of the teacher. Teachers must see a need for change. Teachers need to be exposed and see what's there so they can formulate what they want to do. It is important to go to other schools and observe other programs--not to copy but to get ideas and then to use those ideas. Teachers can use other teachers as

resources."

Contextual Factors Contributing to Change

Responses to the questionnaire produced eight contextual factors which had a positive effect on the process of change.

(1) External **Support** - Support from school board, central office, and university personnel was cited as having a positive effect.

(2) **Training** - Principals and teachers referred to the benefits of staff development.

(3) **Resources** - The availability of funds and the purchase of materials for use in the classroom were influential factors.

(4) **Information**, Research, and New Programs - The motivating influences of germane research, new programs, and innovative techniques were mentioned.

(5) Support from **Parents** - The positive effects of parental support and involvement were cited.

(6) Building-Based Autonomy and **Empowerment** - Autonomy and building based decision-making were cited.

(7) **Student Outcomes** - Student outcomes, student achievement, and increased student interest and motivation were mentioned as a positive influence on the change efforts.

(8) **Staff Attitude** - A positive school culture was described as a staff which is constantly striving to improve and a school environment that has the

supportive atmosphere that is conducive to change.

Quotes regarding contextual factors further amplified these points. "The staff at our school is very interested in improving instruction. We like to keep up on trends and ideas. The staff has informal curriculum and instructional evaluation discussions throughout the year. We offer each other a lot of support. The sharing of ideas and the freedom to discuss and offer suggestions encourages staff communication and cooperation." "You must have support from central office, parents, and school board to be able to implement reform." "The student progress we have seen is motivating for teachers." "A climate for change has been established in the corporation, school, and in the classrooms. The school has become focused on providing positive change through looking at research." "The culture of our building supports innovation and encourages risk-taking."

The conceptual framework consisting of the four domains provided the structure with which to examine and display the data. Figure 1 displays the conceptual framework that this study proposes as a Model for Successful Change. The Model for Successful Change provides a visual outline of the necessary components of a successful change effort.

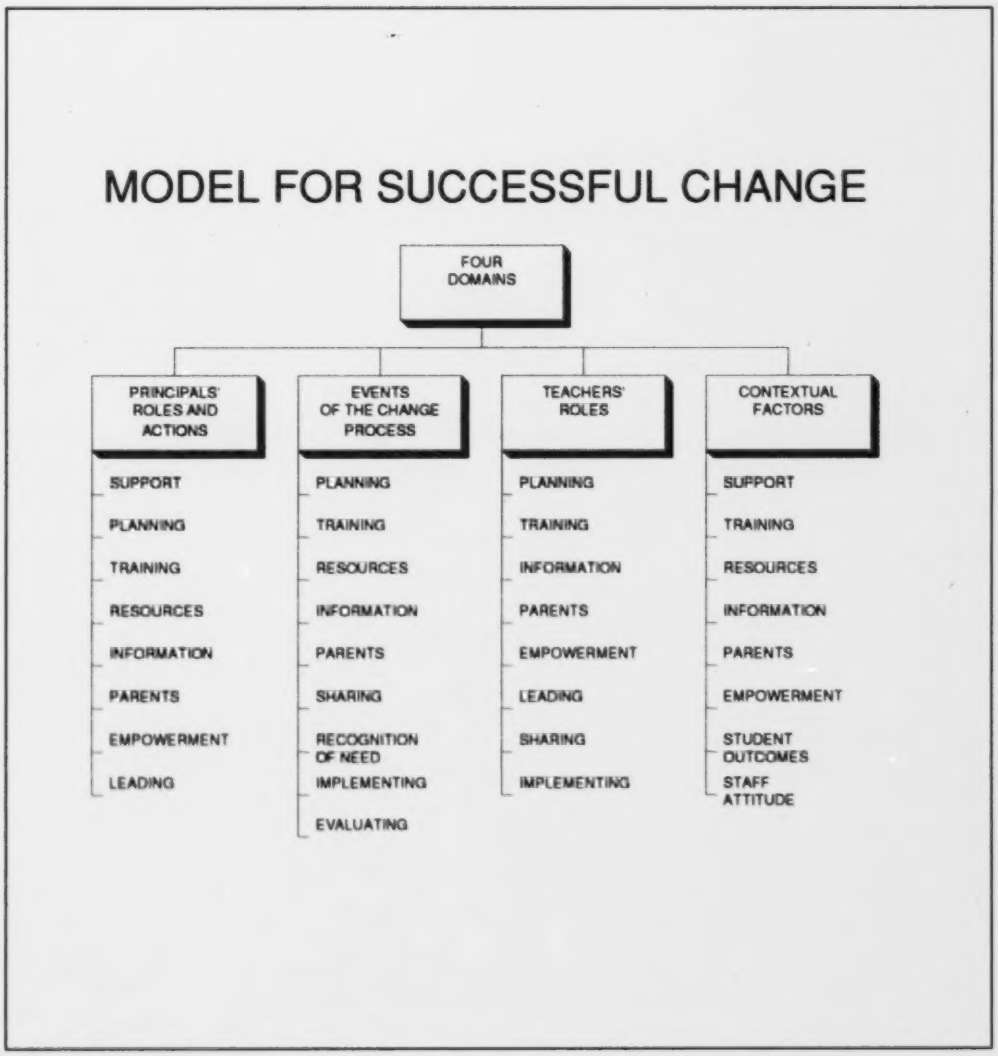

Figure 1
Model for Successful Change

Discussion

Three major implications emerge from this study. First, the role of the principal in the change process was crucial. One teacher in this study said that "change occurs at our school because of our principal." Principals can make the difference between success and failure in educational change. Genuine school reform will only take place by starting with the world of teachers in individual classrooms (Lieberman & Miller, 1986; Honig, 1988; National Research Council, 1989). In this study the principals and teachers themselves provide the words for the principals' actions.

Second, even traditional teachers will change their teaching methods and beliefs if they are empowered to make the decisions that will impact their classrooms. Teachers were more willing to attempt new teaching methods, however, when a risk-free atmosphere was provided by the principal. Teachers must believe that they can try new techniques and possibly fail with no fear of reproach from the principal. It is also important for principals to permit teachers to change at their own pace and determine when their participation will commence. Appropriate staff development and ongoing training then become critical for the process to proceed successfully.

Finally, Deal (1984) warned that top-down approaches to school improvement are doomed to the same type of failure that the educational reforms of the past have experienced. The collaborative planning structures that were reported as successful by the elementary schools in this study is a

commanding edict for the simultaneous top-down/bottom-up approach that is suggested by Fullan (1991).

Even though The Model for Successful Change provides an outline for considering the phenomenon of the process of change, the domains and strategies do not necessarily operate independently of each other. Because change is multidimensional (Fullan, 1991), the dynamic interrelationship between the domains and strategies, rather than any one factor, will determine the success of the outcome. Table 1 presents the interaction and relationships between the four domains and the strategies.

Table 1
Interaction Matrix

	Principals' Roles and Actions	Events of the Change Process	Teachers' Roles	Contextual Factors
Support	X			X
Planning	X	X	X	
Training	X	X	X	X
Resources	X	X		X
Information	X	X	X	X
Parents	X	X	X	X
Empowerment	X		X	X
Leading	X		X	
Sharing		X	X	
Recognition of Need		X		
Implementing		X	X	
Evaluating		X		
Student Outcomes				X
Staff Attitude				X

Notice that some strategies were cited in more than one domain. The matrix illustrates the overlapping nature of change in schools and the potential for adding together. The discrete elements of each strategy are not as significant as the synergism of efforts which can achieve results which are greater than the 'sum of its parts.' It is not sufficient to focus on a single domain, or even two or three. For example, the process of change at the school level needs the support and involvement of the principal. On the other hand, a principal alone can not make substantive changes at a classroom level unless teachers assume ownership and accountability for the changes and receive appropriate training and support. All of these are influenced by the context in which the school exists. Therefore, all the domains become simultaneously contingent upon each other as each school is situationally bound within its own unique context.

The essence of effectiveness is that each school will have a different process, a different principal, different teachers, and different contextual factors but the common elements of all of the strategies are the bond that hold the totality together. By attending to the strategies within each domain and the requisite interconnectedness, principals can facilitate the type of successful school reform that has been so elusive in the past.

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